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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,310	03/19/2004	John S. Stockwell	USA.348	7323

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3D SYSTEMS, INC.
26081 AVENUE HALL
VALENCIA, CA 91355

EXAMINER	
VO, ANH T N	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/804,310	STOCKWELL ET AL.	
	Examiner	Art Unit	
	Anh T.N. Vo	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 9-12* is/are rejected.

7)☒ Claim(s) *6 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/19/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The references cited on PTO 1449 have been considered.

Double patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2 and 11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-52 of Varnon et al. (U.S. Pat. 6,902,246) in view of Isayama (US Pat. 4,301,459) and Sugiyama (US Pat. 6,609,780).

Varnon et al. disclose in claims 1-52 a material feed system comprising:

said inkjet material dispensing system is a selective deposition modeling system for producing

three-dimensional parts (column 17, lines 22-24);
- a build environment having a build platform for supporting the three-dimensional object while it is being formed (column 20, lines 30-32);
- at least one dispensing device adjacent said build platform for dispensing said material to form layers of the three-dimensional object (column 20, lines 33-35);
- a motion means for respectively moving said dispensing device and said build platform with respect to each other (column 20, lines 41-43);
- means for normalizing the layers of said dispensed material thereby producing waste material (column 19, lines 45-47);
- a computer controller for receiving object data descriptive of the three-dimensional object and for processing the data and controlling the apparatus when forming the three-dimensional object (column 19, lines 2-8);
- a material delivery means for receiving and delivering said at least one material to said dispensing device (column 18, lines 60-63); and
- a waste removal means for depositing said waste material in a waste receptacle (column 19, line 50-51).

However, Varnon et al do not disclose a bubble removal vessel comprising an inlet port, an exit port, a level sensor, a hollow interior, and a vent port; means for feeding a feed material to said inlet port; means for removing said feed material from said exit port for delivery to an ink-jet print head; means for venting said gas bubbles from said vent port; and wherein said exit port is in fluid flow communication with an inkjet print head, and is located below said inlet port to ensure the removal of gas bubbles.

Nevertheless, Isayama discloses in Figures 2 , 4-7 and 9 an ink ejection apparatus comprising:

- a bubble removal vessel (36) comprising an inlet port (48), an exit port (49), a hollow interior (47), and a vent port (53) (Figure 4);
- means (35) for feeding a feed material (ink) to said inlet port (48) (Figures 2 and 4);

- means (35) for removing said feed material (ink) from said exit port (49) for delivery to an ink-jet print head (37) (Figures 2 and 4);
- means (56) for venting said gas bubbles from said vent port (53) (Figure 4, column 4, lines 38-45); and
- wherein said exit port (49) is in fluid flow communication with an inkjet print head (37), and is located below said inlet port (48) to ensure the removal of gas bubbles (Figure 7).

Furthemore, Sugiyama discloses in Figure 4 an ink supply system comprising a bubble removal vessel (12) comprising an inlet port (19), an exit port (14), a level sensor (12a), and a vent port (15).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Isayama et al and Sugiyama into the Varnon et al. material feed system for the purpose of stabilizing a material feed from material containers to dispensing device by removing air bubbles on feeding lines and providing a sensor to detect a predetermined level of ink in the bubble removal tank.

Claim 12 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-52 of Varnon et al. (U.S. Pat. 6,902,246) in view of Isayama et al. (US Pat. 4,301,459) and Sugiyama (US Pat. 6,609,780) as applied in claim 11 and further in view of Heinzl et al. (US Pat. 4,149,172).

Varnon et al. in view of Isayama et al. and Sugiyama discloses the basic features of the claimed invention were stated above but does not disclose that said bubble removal vessel includes an internal mesh filter for filtering of micro bubbles from said feed material.

Heinzl et al. disclose in Figures 1-4 an ink supply system comprising said bubble removal vessel (4, 5, 6) includes an internal mesh filter (4) for filtering of micro bubbles from said feed material (ink) (column 6, lines 1-11)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Heinzl et al. into the Varnon et al. material feed system, as modified, for the purpose of providing a filter to prevent air bubbles from entering into a ink jet head device

CLAIM REJECTIONS

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 USC 102 (a) as being anticipated by Isayama (US Pat. 4,301,459).

Isayama discloses in Figures 2, 4-7 and 9 an ink ejection apparatus comprising steps of:

- delivering a feed material (ink) to a bubble removal vessel (36) having a top, a bottom, and opposing sides (Figure 2);
- allowing gas bubbles in said feed material (ink) to rise to said top (54) of said bubble removal vessel (36) (Figure 4, column 4, lines 38-41);
- removing bubble free feed material (ink) from a point near said bottom of said bubble removal vessel (36) (Figures 2 and 4),
- feeding said bubble free feed material (ink) to an inkjet print head (37) (Figure 2, column 3, lines 60-64);
- removing gas from said top (54) of said bubble removal vessel (36) by venting said bubble removal vessel (36) (Figures 2 and 4, column 4, lines 38-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-5 are rejected under 35 USC 103 (a) as being unpatentable over Varnon et al. (US Pat. 6,902,246) in view of Isayama (US Pat. 4,301,459).

Varnon et al. disclose in Figure 7 a material feed system comprising:

- said inkjet dispensing system is a two-dimensional system for producing conventional two-dimensional images (column 2, lines 10-11);
- wherein said feed material is a support material (23B) for supporting a build material (23A) during a build process (column 7, lines 6164); and
- wherein said feed material is a build material (23A) for building parts during a build process (column 4, lines 60-67).

However, Varnon et al do not disclose steps of delivering a feed material to a bubble removal vessel having a top, a bottom, and opposing sides; allowing gas bubbles in said feed material to rise to said top of said bubble removal vessel; removing bubble free feed material from a point near said bottom of said bubble removal vessel, feeding said bubble free feed material to an inkjet print head; removing gas from said top of said bubble removal vessel by venting said bubble removal vessel.

Nevertheless, Isayama discloses in Figures 2 , 4-7 and 9 an ink ejection apparatus comprising steps of:

- delivering a feed material (ink) to a bubble removal vessel (36) having a top, a bottom, and opposing sides (Figure 2);
- allowing gas bubbles in said feed material (ink) to rise to said top (54) of said bubble removal vessel (36) (Figure 4, column 4, lines 38-41);
- removing bubble free feed material (ink) from a point near said bottom of said bubble removal vessel (36) (Figures 2 and 4),
- feeding said bubble free feed material (ink) to an inkjet print head (37) (Figure 2, column 3, lines 60-64);
- removing gas from said top (54) of said bubble removal vessel (36) by venting said bubble removal vessel (36) (Figures 2 and 4, column 4, lines 38-45).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Isayama et al into the Varnon et al. material feed system for the purpose of stabilizing a material feed from material containers to dispensing device by removing air bubbles on feeding lines.

Claims 7 and 9 are rejected under 35 USC 103 (a) as being unpatentable over Isayama (US Pat. 4,301,459) in view of Sugiyama (US Pat. 6,609,780).

Isayama discloses in Figures 2 , 4-7 and 9 an ink ejection apparatus comprising:

- a bubble removal vessel (36) comprising an inlet port (48), an exit port (49), a hollow interior (47), and a vent port (53) (Figure 4);
- means (35) for feeding a feed material (ink) to said inlet port (48) (Figures 2 and 4);
- means (35) for removing said feed material (ink) from said exit port (49) for delivery to an ink-jet print head (37) (Figures 2 and 4);
- means (56) for venting said gas bubbles from said vent port (53) (Figure 4, column 4, lines 38-45); and
- wherein said exit port (49) is in fluid flow communication with an inkjet print head (37), and is located below said inlet port (48) to ensure the removal of gas bubbles (Figure 7).

However, Isayama does not disclose a bubble removal vessel comprising a level sensor.

Nevertheless, Sugiyama discloses in Figure 4 an ink supply system comprising a bubble removal vessel (12) comprising an inlet port (19), an exit port (14), a level sensor (12a), and a vent port (15).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Sugiyama into the Isayama et al. ink jection apparatus for the purpose of providing a sensor to detect the predetermined level of ink in the ink tank (12) (column 10, lines 36-41).

Claims 10 is rejected under 35 USC 103 (a) as being unpatentable over Isayama (US Pat. 4,301,459) in view of Sugiyama (US Pat. 6,609,780) as applied to claim 1 and further in view of Heinzl et al. (US Pat. 4,149,172).

Isayama in view of Sugiyama discloses the basic features of the claimed invention were stated above but does not disclose that said bubble removal vessel includes an internal mesh filter for filtering of micro bubbles from said feed material.

Heinzl et al. disclose in Figures 1-4 an ink supply system comprising said bubble removal vessel (4, 5, 6) includes an internal mesh filter (4) for filtering of micro bubbles from said feed material (ink) (column 6, lines 1-11)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Heinzl et al. into the Isayama et al. ink jection apparatus, as modified, for the purpose of providing a filter to prevent air bubbles from entering into a ink jet print head.

Allowable Subject Matter

Claim 6 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because none of the prior art references of record discloses a method for removing gas bubbles from a feed material to an inkjet material dispensing system comprising a step of removing the gas bubbles that are performed by periodically venting a bubble removal vessel responsive to a liquid level measurement in the bubble removal vessel in the combination as claimed.

Claim 8 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because none of the prior art references of record discloses an apparatus for removing gas bubbles from an inkjet material dispensing system comprising a means for venting gas bubbles from a vent port that includes a vent port seal connected to an actuating device controlled by a signal from a level sensor of a bubble removal vessel in the combination as claimed.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M.to 7:00 P.M..

The fax number of this Group 2861 is (571) 273-8300.

ANH T. N. VO
PRIMARY EXAMINER
February 7 2006